



A.D. 1867, 20th APRIL. N° 1153.

S P E C I F I C A T I O N

OF

WILLIAM HARRISON.

CONSUMING SMOKE IN FURNACES.

LONDON:

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,

PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY:

PUBLISHED AT THE GREAT SEAL PATENT OFFICE,

35, SOUTHAMPTON BUILDINGS, HOLBORN.

1867.



A.D. 1867, 20th APRIL. N^o 1153.

Consuming Smoke in Furnaces.

LETTERS PATENT to William Harrison, of Wharton Green, Winsford, in the County of Cheshire, in the United Kingdom of Great Britain and Ireland, Salt Manufacturer, for the Invention of "AN IMPROVED METHOD OF CONSUMING SMOKE IN FURNACES."

Sealed the 4th June 1867, and dated the 20th April 1867.

COMPLETE SPECIFICATION filed by the said William Harrison at the Office of the Commissioners of Patents, with his Petition and Declaration, on the 20th April 1867, pursuant to the 9th Section of the Patent Law Amendment Act, 1852.

5 TO ALL TO WHOM THESE PRESENTS SHALL COME, I, WILLIAM HARRISON, of Wharton Green, Winsford, in the County of Cheshire, in the United Kingdom of Great Britain and Ireland, Salt Manufacturer, send greeting.

WHEREAS I am in possession of an Invention for "AN IMPROVED METHOD
10 OF CONSUMING SMOKE IN FURNACES," and have petitioned Her Majesty to grant unto me, my executors, administrators, and assigns, Her Royal Letters Patent for the same, and made solemn Declaration that I am the true and first Inventor thereof.

NOW KNOW YE, that I, the said William Harrison, do hereby declare
15 that the following Complete Specification, under my hand and seal, fully describes and ascertains the nature of the Invention, and the manner in which the same is to be performed, reference being had to the accompanying

Harrison's Improved Method of Consuming Smoke in Furnaces.

Drawings, in which the same letters of reference indicate similar parts, that is to say :—

My Invention relates to an improved method of consuming smoke in furnaces, the merits of which are that it will give a greater amount of heat for making salt, heating boilers, and such like applications with a lesser quantity of coals 5 than by the old method, and with little or no smoke ; that it is applicable to one or more furnaces ; that the smoke from one or more furnaces, as represented in Figure 5 by the letters B, B, B, B, and C, C, C, C, or B, B, G, F, B, B, and C, C, H, I, C, C, or in Figure 2 by the letters A, B, C, D, or A, B, E, F, C, D, may be taken up one or more flues, turned round, and be brought 10 again to the furnace or furnaces or to another set of furnaces, down one or more flues, and be turned out in a furnace at the front side, as represented in Figure 6 by the letters A, O, P, A, and D, D, M, N, back, as represented in the same Figure by the letters A, A, A, A, and D, D, D, D, or A, A, O, P, A, A, and D, D, M, N, D, D, bottom or top (with the proper quantity of air 15 admitted) through a flue or flues or culvert, as represented in Figure 3 by the letters D, I, C, A, wholly or partly in the other furnace or furnaces, to be made of iron, fire-clay, bricks, or other other material, and it or they may enter the furnace or furnaces at the front, side, back, bottom, or top, and may cross the furnace in any direction that is desirable, and may come out of the furnace or 20 furnaces at the front, side, back, bottom, or top, and it or they may be on a level with the furnace bars raised above them or suspended in the furnace according to the quantity of heat required ; or the smoke from the furnace or furnaces may enter the flue or flues and then be met by the flame and smoke from the furnace, as in Figure 5 ; or the smoke and flame from 25 the furnace, as represented in Figure 4 by the letters B, B, B, B, or B, B, E, F, B, B, may enter a flue or flues wholly or partly carried through the furnace, and be met at the entrance of the flue or flues by the flame and smoke from the furnace, represented by the letters A, A, A, A, or A, A, O, P, A, A, or as represented in Figure 6 by the furnaces A, A, A, A, and 30 O, P, A, A, or as represented in Figure 7. There are doors or openings to the flues for supplying the smoke with the proper quantity of air in the furnace in which the smoke is turned loose, or in the furnace whose flame and smoke meets the flame and smoke from the other furnace or furnaces, and in the flue or flues in the furnace at the front, side, back, bottom, or top, or behind 35 the furnace bars, out of the ash-pit, or through the jambs between the furnaces leading into the flue or flues which pass through the furnaces ; also openings to admit air so that it may mix with the smoke before it comes to the flame of the furnace. There may be openings in the flue or flues that pass through

Harrison's Improved Method of Consuming Smoke in Furnaces.

the furnaces for the heat from the fire to pass into the flue so that it may attain a greater heat, and the smoke thus mixed with air ignites and gives off a great deal of heat in the flue or flues that lead to the chimney, and the flue or flues are provided with a damper or dampers at the end where it or
5 they go in or come out of the furnace to check the escape of smoke when the fires are mended with fresh coals.

Having thus described the nature of the said improvements, and the manner of carrying the same into effect, I would have it understood that I do not confine myself to the precise details above enumerated, as these may
10 obviously be modified without departing from the principle of the Invention according to the special construction and intended applications of the furnaces in which they are adopted ; but what I claim is,—

First, the flue or flues or culverts in the furnaces, no matter how carried through the furnace.

15 Second, a combination of furnaces so that the smoke from one or more furnaces may be consumed by one.

Third, a combination of furnaces so that they may consume the smoke from each other.

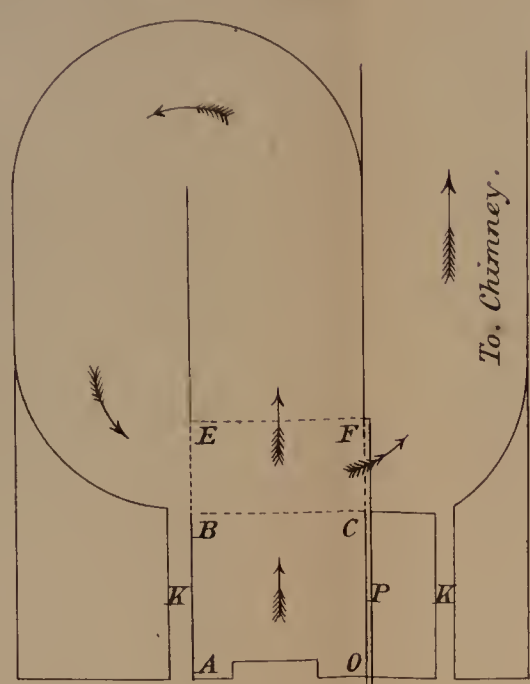
20 In witness whereof, I, the said William Harrison, have hereunto set my hand and seal, this Sixteenth day of April, in the year of our Lord One thousand eight hundred and sixty-seven.

WILLIAM HARRISON. (L.S.)

LONDON :

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1867.

FIG. 1.
Plan of one furnace.



A, B, C, D, or A, B, E, F, C, D, Furnace.
B, E, F, C, Flue passing through Furnace.
K, K, Air Flues.
P, Damper.

Elevation.

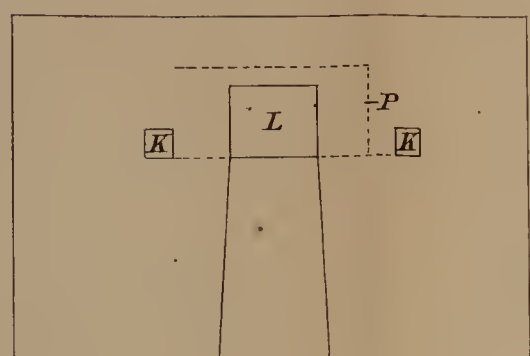
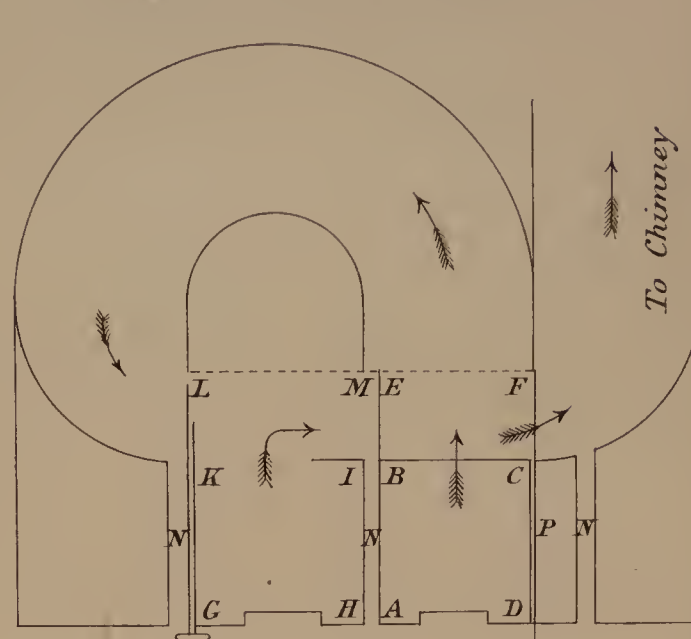


FIG. 2.
Plan of two furnaces.



A, B, C, D, or A, B, E, F, C, D, Furnace.
G, K, L, H, or G, K, L, M, L, H, D^o.
L, E, C, K, Flue passing through Furnaces.
N, N, N, Air Flues.
P, P, Dampers.

Elevation.

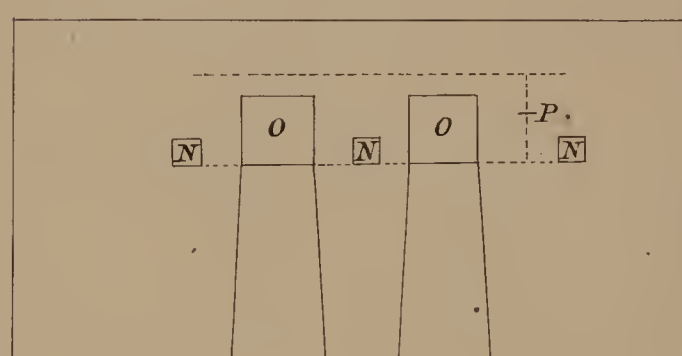
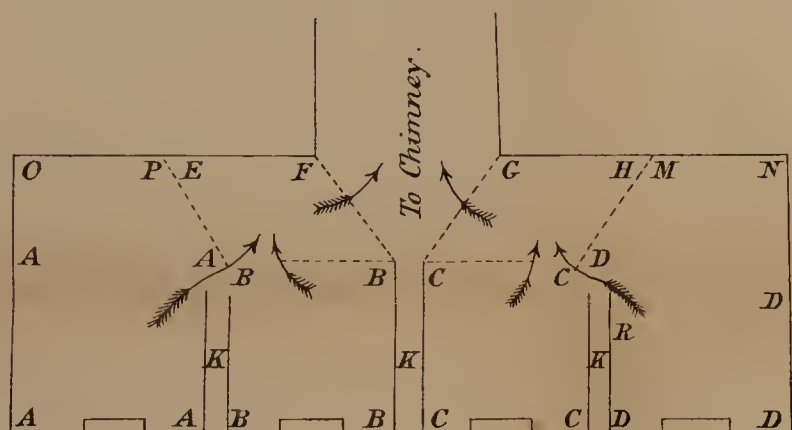


FIG. 3.
Plan of four furnaces.



A, A, A, A, or A, A, O, P, A, A, Furnace.
B, B, B, B, or B, B, E, F, B, B, D^o.
C, C, C, C, or C, C, G, H, C, C, D^o.
D, D, D, D, or D, D, M, N, D, D, D^o.
B, E, F, B, & G, H, C, C, Flues in Furnace.
K, K, K, Air Flues.

FIG. 5.
Elevation.

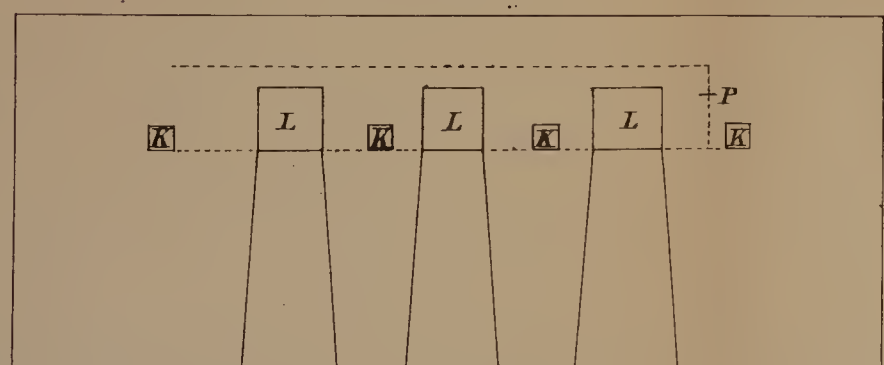


FIG. 4.
Plan of four furnaces.

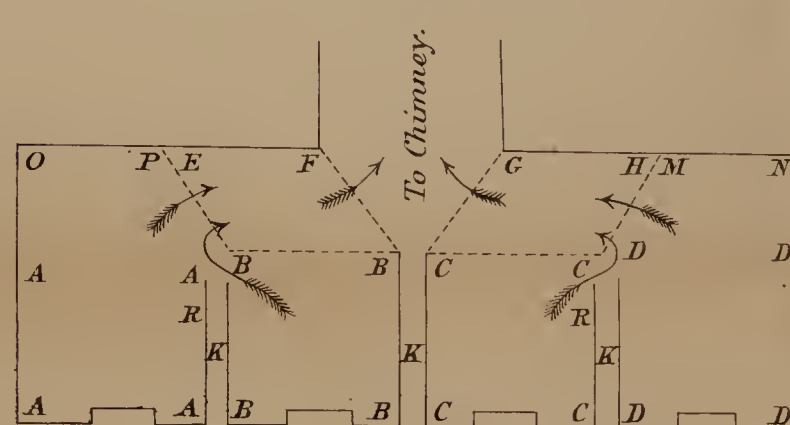
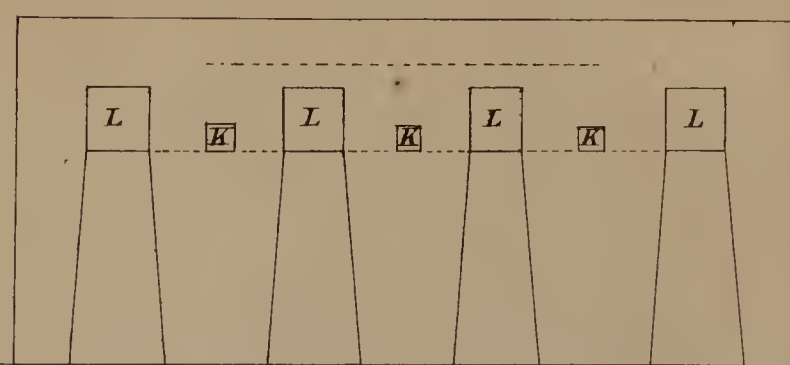


FIG. 6.
Elevation.



Plan of three furnaces.

Plan of four or six furnaces.

A, A, A, A, or A, A, O, P, A, A, Furnace.
B, B, B, B, or B, B, E, F, B, B, D^o.
C, C, C, C, or C, C, G, H, C, C, D^o.
D, D, D, D, or D, D, M, N, D, D, D^o.
K, K, K, Air Flues.
L, L, L, L, Furnace doors.
E, B, B, F, & H, C, C, G, Flues in Furnace.
A, O, P, A, Furnace.
D, N, M, D, Furnace.

A, A, A, A, or A, A, D, E, A, A, Furnace.
B, B, B, B, or B, B, E, F, B, B, D^o.
C, C, C, C, or C, C, H, I, C, C, D^o.
D, I, C, A, Flue passing through Furnaces.
K, K, K, K, K, Air Flues.
L, L, L, L, Furnace doors.
P, P, Dampers.

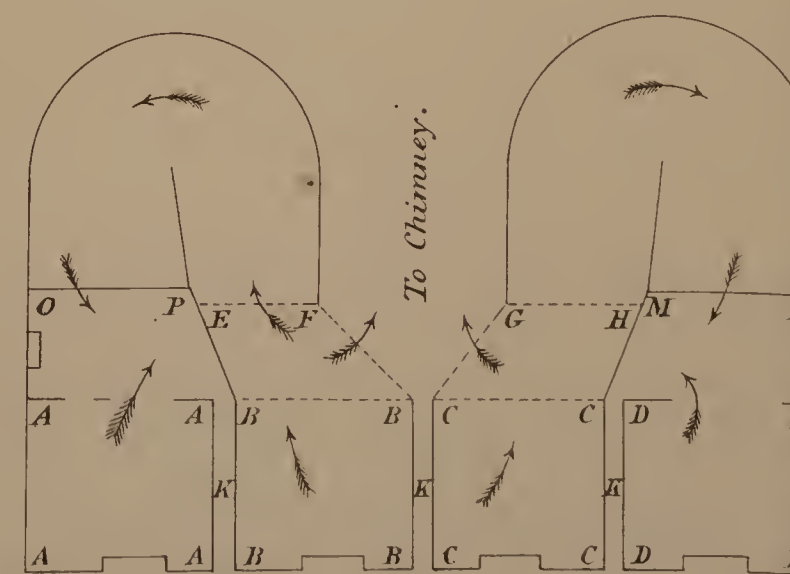
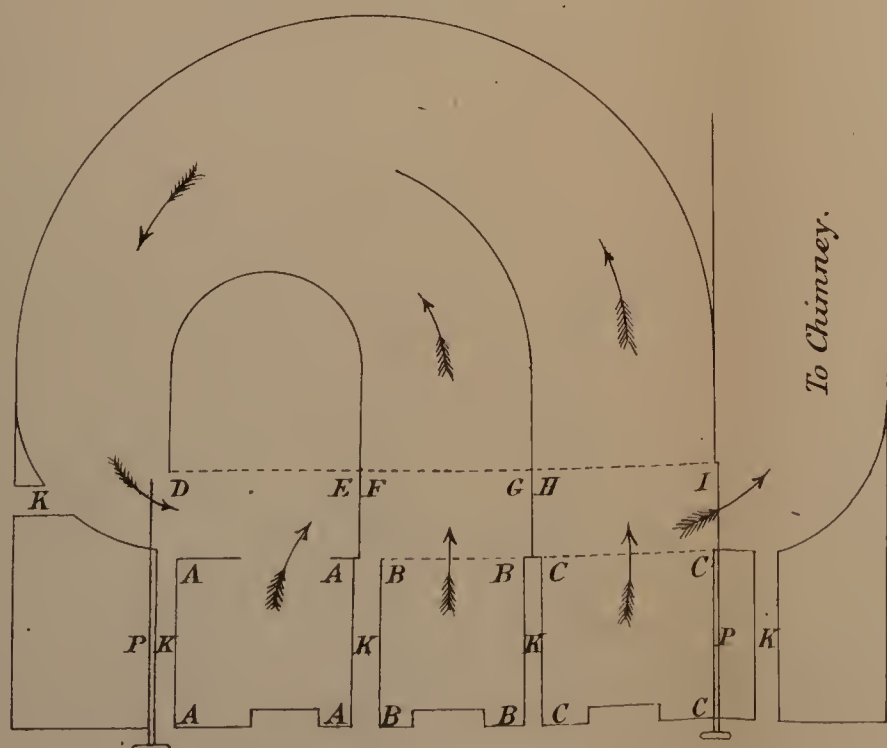


FIG. 7.
Two furnaces.

A, A, A, A, or B, B, B, B, Furnaces.
A, A, B, B, Flue between Furnaces.
K, K, Air Flues.
D, C, Division wall on top of Flue between Furnaces.

